

## **Remarks**

### **Status of the Claims**

Claims 1-58 have been examined. Claims 59-70 have been previously withdrawn without prejudice in response to a Restriction Requirement set forth in the Office Action mailed March 20, 2006.

Applicants hereby amend claims 1, 5, 7, 13-15, 23, 33, 34, 37, and 38; cancels without prejudice claims 6, 12, 20, 21, 26, 35, 45, 46, and 51-58; and add new claims 71-74. After entry of this paper claims 1-5, 7-11, 13-19, 22-25, 27-34, 36-44, 47-50, and 71-74 remain pending for examination.

Claims 1-58 stand rejected. Claims 1-11 and 14-15 stand rejected under 35 U.S.C. § 102(a) as allegedly anticipated by Levenger et al. (PNAS, 99 (7): 4391-4396, 2002) (“Levenger”); claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Buttery et al. (Tissue Eng., 7 (1): 88-99, 2001) (“Buttery”)(abstract only provided); claims 1-51, 54-55 and 58 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 5,962,325 to Naughton et al. (“Naughton”) in view of Griffith et al. (Science, 295: 1009-1014, 2002)(“Griffith”); claims 53-54 and 57-58 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Levenger in view of Guan et al. (Cell Tissue Res., 305: 171-176, 2001); and claims 52-54 and 56-58 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Levenger in view of U.S. Published Application No. 2002/0146678 by Benvenisty et al. (“Benvenisty”).

### **Amendments to the Claims and New Claims**

Support for the amendments to the claims and new claims can be found through out the application. For example, support for the amendments to the claims and new claims can be found at least at page 14, lines 4-12, page 20, lines 7-16, page 33, line 17 to page 34, lines 2, and in Figure 10 and accompanying text. Accordingly, no new matter is added.

Rejections under 35 U.S.C. §103(a) based on Levenger & Guan and Levenger & Benvenisty

Although Applicants currently cancel claims 51-58 without prejudice, thus rendering the rejections of these claims moot, Applicants do not acquiesce in the rejections of these claims nor in the view that Levenger and Benvenisty are properly prior art to the present inventions. Applicants are currently investigating whether the inventions of the present application were invented before the publication of Levenger or Benvenisty, or invented by another in Levenger.

Rejections under 35 U.S.C. §103(a) based on Naughton & Griffith

Applicants respectfully submit that the amendments to independent claims 1 and 23, and the cancellation without prejudice of claims 51-85, render moot the pending rejections and place the amended claims in condition for allowance. Nevertheless, Applicants submit that Naughton and Griffith both fail to teach or suggest to one of ordinary skill in the art, either alone or in proper combination, either a tissue engineering construct comprising

embryonic stem cells [in a] a three-dimensional cell support polymer matrix and a cell adhesion promoter, wherein the matrix is resistant to contractile forces exerted by the stem cells such that a cross-sectional area of the matrix is not reduced by more than 50% under a contractile force exerted by the embryonic stem cells; [with] at least one growth factor selected to promote differentiation of the stem cells into smooth muscle cells having a three dimensional vascular network

as set forth in Applicants claims 1-5, 7-11, 13-19, 22 and 71-72, or a method of making a tissue engineering construct by

providing a population of embryonic stem cells, seeding the embryonic stem cells on a three dimensional cell support matrix comprising a polymer and a cell adhesion promoter; and exposing the embryonic stem cells to at least one agent selected to promote differentiation of the stem cells into smooth muscle cells having a three dimensional vascular network

as set forth in Applicants claims 23-25, 27-34, 36-44, 47-50, and 73-74.

In addition, although Applicants currently amend independent claims 1 and 23, as well as other claims, and cancel without prejudice claims 51-58, as well as other claims, Applicants do not acquiesce in the rejections of these claims nor in the view that Griffith is properly prior art to the present inventions. Applicants are currently investigating whether the inventions of the present application were invented before the publication of Griffith.

*Rejections under 35 U.S.C. §102 of based on Levenger and Buttery*

Claims 1-11 and 14-15 stand rejected based on Levenger and claims 1-2 stand rejected based on Buttery. Applicants respectfully submit that the amendments to independent claim 1 render moot the pending rejections under 35 U.S.C. § 102 and place the amended claims in condition for allowance. Nevertheless, Applicants submit that Levenger and the Buttery abstract both fail to teach or suggest to one of ordinary skill in the art, either alone or in proper combination, either a tissue engineering construct comprising

embryonic stem cells [in a] a three-dimensional cell support polymer matrix and a cell adhesion promoter, wherein the matrix is resistant to contractile forces exerted by the stem cells such that a cross-sectional area of the matrix is not reduced by more than 50% under a contractile force exerted by the embryonic stem cells; [with] at least one growth factor selected to promote differentiation of the stem cells into smooth muscle cells having a three dimensional vascular network

as set forth in Applicants claims 1-5, 7-11, 13-19, 22 and 71-72, or a method of making a tissue engineering construct by

providing a population of embryonic stem cells, seeding the embryonic stem cells on a three dimensional cell support matrix comprising a polymer and a cell adhesion promoter; and exposing the embryonic stem cells to at least one agent selected to promote differentiation of the stem cells into smooth muscle cells having a three dimensional vascular network


as set forth in Applicants claims 23-25, 27-34, 36-44, 47-50, and 73-74.

In addition, although Applicants currently amend independent claim 1, as well as other claims, Applicants do not acquiesce in the rejections of these claims nor in the view that Levenger is properly prior art to the present inventions. Applicants are currently investigating whether the inventions of the present application were invented before the publication of Levenger, or invented by another in Levenger.

### CONCLUSION

In view of the above, it is believed that all presently pending claims are in condition for allowance, and it is respectfully requested that the claims be allowed. If the Examiner feels that a telephone call would expedite the prosecution of this case, the Examiner is invited to call the undersigned at (617) 248-5016.

Respectfully submitted,

  
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Date: March 21, 2007

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